

Digital Humanities in Biblical Studies and Theology

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Digital Tools for Working with New Testament Manuscripts

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Abstract: This article critically examines the functionalities and significance of three prominent digital tools that have become central to the study of Greek New Testament manuscripts. The design, functionalities, and significance of the New Testament Virtual Manuscript Room (NTVMR), the Center for the Study of New Testament Manuscripts (CSNTM) digital library, and the Pinakes database have a hand in shaping the research questions of the field. As such, it is important to understand what these tools do, how they function, and how they might develop further to address the needs of the field. The analysis of these tools leads to fundamental questions about using digital representations as proxies for primary sources, challenges for managing the materiality of artefactual and digital objects, the collaborative nature of digital scholarship, and the implicit interpretations of the Greek New Testament tradition inherent in digital workspaces.

Keywords: Center for the Study of New Testament Manuscripts, Digital Images, Digital Workspaces, Manuscripts, New Testament, Pinakes

The first person to ever collate every known Greek manuscript of a specific New Testament work was Herman Charles Hoskier, a wealthy eccentric with a fine moustache. He published the fruits of his over three decades of labour in 1929 as the two-volume behemoth *Concerning the Text of the Apocalypse*.¹ The greatest practical barrier to Hoskier's work, as he complained multiple times in letters to colleagues, was that travel to view manuscripts was expensive, time-consuming, and sometimes dangerous. To view Revelation's manuscripts Hoskier travelled to European and American libraries in the turbulent period around the Great War (in which he was twice wounded in the French ambulance service), commissioned photographs of manuscripts at his own expense, and at times purchased them outright.² Even for an indefatigable scholar of great means, the task of collating every known manuscript of a New Testament work was nigh on impossible. Only Hoskier's religious determination to rescue the *textus receptus*, his dwindling personal cash reserves, and use of a technology that was becoming more affordable in his time (photography) allowed him to complete this task within his lifetime.³

Hoskier's enthusiastic utilization of emerging technologies like affordable photography sheds light on the critical adoption of new forms of media in current scholarship. Researchers have always experimented

1 Hoskier, *Concerning the Text of the Apocalypse* (1929).

2 The dangers of early twentieth century European politics notwithstanding, these reasons also explain why only two individuals have ever persevered to accomplish this feat since Hoskier: Wasserman, *The Epistle of Jude* (2006) for Jude and Solomon, "The Textual History of Philemon" (2014) for Philemon.

3 Once a well-off inheritor, securities trader in Gilded Age Manhattan, and graduate of the blueblood Eton College, Hoskier died nearly penniless and alone on Jersey in the Channel Islands. On his biography, the significance of his scholarship, and his personal idiosyncrasies see Allen, "There is No Glory and No Money in the Work," 1–19; Allen, "The Patient Collator and the Philology of the Beyond," 3–38, and other articles in Allen, ed., *The Future of New Testament Textual Scholarship* that explore his significance for modern textual scholarship.

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with whatever implements were available to build a case for their arguments, and it is not surprising that modern biblical scholars continue to develop digital technologies and online research tools that help to answer critical questions. In a time when scholarship is migrating away from print culture toward digital media (or at least combining print and digital modalities in ever more complex ways), many publicly-funded projects and much critical effort are being invested in the production of digital tools that help to answer our current research questions and to disseminate our conclusions. Hoskier's reliance on inexpensive photographic reproduction is no different than modern textual scholarship's reliance on digital images and metadata.

Although in many ways still in their infancy, digital tools and online repositories have significantly increased the efficiency of manuscript consultation through the medium of digital images and bibliographic databases. For example, and although much less ambitious than Hoskier's enterprise, I am in the process of completing a monograph centred around four studies that required reading parts of *every* Greek manuscript of the book of Revelation, culling relevant data from different aspects of these artefacts.⁴ I was able to explore these manuscripts in only about two years because the images of the manuscripts and other information about them was already aggregated in a number of websites designed for such research. And in this process, the quality of digital images – whether high or low – raised new and unforeseen questions about a particular manuscript. I did of course visit libraries and museums to personally view manuscripts during this time,⁵ but the majority of my work occurred at my desk in a country with only two Greek copies of the book of Revelation (P⁴⁷ and GA 61). The multiplicity of major institutional digitization projects,⁶ editorial platforms that offer access to manuscript images, and bibliographic databases has drastically increased the efficiency of access to manuscripts and information on past scholarly encounters with these artefacts. This article analyzes three digital tools that have been central to my recent research: the New Testament Virtual Manuscript Room (NTVMR), the image library of the Center for the Study of New Testament Manuscripts (CSNTM), and the Pinakes database. There are of course multiple other websites that are valuable for the study of New Testament manuscripts, like the Leuven Database of Ancient Books, Papyri.info, sites that focus on specific manuscripts, and institutional websites like DigiVatLib and BnF Gallica.⁷ But many of these tools focus exclusively on the papyri or other early manuscripts of the New Testament's tradition, or are oriented primarily toward public consumptions rather than scholarly research. I want to explore tools that enable the study of the later, more neglected manuscripts of the New Testament and sites that aggregate information that transcends institutional holdings. The examples that I have chosen are websites that have been designed to inform research on the New Testament manuscripts and cognate manuscripts cultures.

This article evaluates the functionalities and significance of the NTVMR, CSNTM archive, and Pinakes, exploring their many benefits and potential shortcoming when it comes to engaging Greek New Testament manuscripts. What kinds of critical questions are they designed to answer and how might researchers interested in New Testament studies engage them? What overlaps exist between New Testament studies and other non-typographic cultures? How do researchers benefit from the use of these tools and what might be lost when we explore manuscripts in an almost exclusively digital medium? How does the proliferation of increasingly sophisticated digital tools alter research methods and the forming of critical questions? Providing preliminary answers to these questions is important in an academic culture that is continuing to negotiate the relationship between analogue and digital modalities, not only in our research outputs and tools, but also in our access to primary sources and artefacts.

The most important tool for studying the materiality, paratextuality, and texts of New Testament manuscripts is the New Testament Virtual Manuscript Room (NTVMR).⁸ Managed by the Institut für

⁴ There are also now seventy-one more Greek manuscripts than Hoskier knew. See Allen, *Manuscripts of the Book of Revelation*.

⁵ Autopsy examination remains essential to manuscript studies regardless of the availability of digital images.

⁶ See examples articulated in Houghton and Smith, "Digital Editing and the Greek New Testament," 113.

⁷ Leuven Database of Ancient Books <<https://www.trismegistos.org/ldab/about.php>>; Papyri.info <<http://papyri.info/>>; Codex Sinaiticus <<http://www.codexsinaiticus.org/en/>>; HumaRec <<https://humarec.org/>> on GA 460 (Venice, Marciana Gr. Z 11 [379]); Digital Vatican Library <<https://digi.vatlib.it/>>; BnF Gallica <<https://www.bnf.fr>> [all accessed 30 January 2019].

⁸ <<http://ntvmr.uni-muenster.de/>> [accessed 16 January 2019].

Neutestamentliche Textforschung (INTF) in Münster and developed in partnership with the Institute for Textual Scholarship and Electronic Editing (ITSEE) in Birmingham, the site is “devoted to the study of Greek New Testament manuscripts,” as it states on its homepage.⁹ The site functions as an integrated collaborative platform for the work of the Editio Critica Maior (ECM) of the New Testament and other edition projects. As the metadata for the manuscripts archived here continues to accrue with further engagement from the editors and other scholars, the NTVMR is becoming an “open edition” where textual editorial decisions from the various ECM projects can be contextualized by images of the manuscripts, transcriptions, various indices, textual commentary, and other integrated modular databases.¹⁰ The images embedded in the NTVMR are intended to facilitate the production of critical editions, but they are also becoming autonomous digital objects embedded with different forms of metadata – transcriptions, paratextual tags, descriptions, and indices.

Not only is the NTVMR the platform where the digital workflows of the ECM editorial projects are managed, comprising image aggregation, transcription, collation, normalization of readings, and now also publication, but it is a place where scholars beyond the immediate ECM editorial teams can create tools that interpret, supplement, or further contextualize the textual research published there.¹¹ The NTVMR replaces the need to travel to the INTF Münster: every primary source and the main tools that the INTF possess are becoming available in a digital workspace, combined with hyperlinked access to multiple related resources.¹² In addition to efficiency of access, the NTVMR also offers a platform for collaboration and space for scholars to engage with the manuscript images in sophisticated ways.

While the workspace is organised around the electronic transcription of manuscript texts,¹³ the site has organically morphed to accommodate a number of additional tools for textual research. The openness and collaborative atmosphere of the NTVMR is all the more relevant since the ECM fascicle of Acts was published as a digital edition under the “NT Transcripts” module in 2017, a monumental achievement in the development of editions of the New Testament.¹⁴ Unedited real time collations for other New Testament works whose ECM fascicles are in production like the book of Revelation are also available on a contingent basis, along with the main text of the NA28 edition linked to a digital version of the LSJ lexicon. Although still developing, the NTVMR is a powerful omnibus of research tools, manuscript images, and discussion platforms, including multiple blogs and discussion boards.

The most important aspect of the NTVMR when it comes to studying manuscripts is of course its quantity of manuscript images available for research purposes, many of which are digitized versions of the INTF’s microfilm library. As of January 2019 97.3% of all papyri with material from the Greek New Testament, 95.5% of all majuscules, 92.8% of all minuscules, and 27.6% of all lectionaries have been imaged and are available on the website. This is a monumental achievement, a form of modest mass digitization for a specific ancient

⁹ On its development see Clivaz, “Internet Networks and Academic Research,” 165–167; Houghton, “The Electronic Scriptorium: Markup for New Testament Manuscripts,” 31–60; Houghton and Smith, “Digital Editing,” 110–127; and Griffiths, “Software for the Collaborative Editing of the Greek New Testament,” <<http://theses.bham.ac.uk/8244/>> [accessed 24 January 2019].

¹⁰ For example, the Amsterdam Database of New Testament Conjectural Emendation <<http://ntvmr.uni-muenster.de/nt-conjectures>> [accessed 16 January 2019]. On this ideal of creating an open edition, see Schmid, “Transmitting the New Testament Online,” 189–205 (esp. 204).

¹¹ On the editorial processes of the ECM, see Allen, “Text and Tradition,” 3–16 (esp. 4–7). More specific work reports on the ECM of the Apocalypse can be found in Schmid, “Die neue Edition der Johannesapokalypse,” 3–15; Sigismund, “Die neue Edition der Johannesapokalypse,” 3–17.

¹² See Strutwolf, “New Testament Virtual Manuscripts Room,” 275: “Ziel ist es, alle interessierten Nutzer über das Internet mit Quellenmaterial, das sonst nur durch einen Besuch des INTF zugänglich wäre, zu versorgen” (here 275).

¹³ Strutwolf, “New Testament Virtual Manuscript Room,” 276.

¹⁴ Print edition: Strutwolf et al., eds. *Novum Testamentum Graecum Editio Critica Maior* (2017). The digital edition is available under the “NT Transcripts” tab <<http://ntvmr.uni-muenster.de/nt-transcripts>> [accessed 30 January 2019].

literary corpus, lectionaries notwithstanding.¹⁵ Helpfully, a significant quantity of these images – especially the papyri and majuscule script manuscripts – have also been indexed, greatly assisting researchers in accessing witnesses to particular texts.¹⁶ The NTVMR is also integrated with a digital version of the *Kurzgefasste Liste*, a digital version of J. K. Elliott’s *A Bibliography of Greek New Testament Manuscripts*, and the Pinakes database (see below).¹⁷ The incorporation of classic print tools for the study of manuscripts into the digital space of the NTVMR means that the site is becoming an integrated platform for textual and material research on the New Testament and a model for the study of other non-typographic ancient literary corpora. It is multifaceted, flexible, and open to new research ventures and tools for engaging the tradition.

However, the NTVMR still retains limitations in terms of researching these manuscripts, especially their bibliographic and material contexts. First, leaving aside the fact that the site lacks entirely comprehensive images for every manuscript, not all images that it does have are directly open to the public due to issues associated with copyright and holding institution restrictions. Scholars can, however, register and gain greater access to the images for research purposes with minimal limitation. Second, and more to the point, not every folio of every codex that preserves a part of the New Testament is available. In many cases only the New Testament portion of a codex is present, omitting access to any other parts of the artefact, like lection tables, prologues, onomastic traditions, or other non-biblical literature, a point of particular import for the book of Revelation.¹⁸ Not only does this situation lead to possible misunderstandings about the bibliographic context of the New Testament’s transmission, but it creates issues in evaluating the production layers of codex, its history of use, and other codicological aspects of its current form.

A good example of both the NTVMR’s inherent value and current limitations is GA 2062 (Vatican, Bibl. Vat., Vat. gr. 1426), especially if, for example, one was interested to explore it as an example of the codices that preserve the book of Revelation alongside the works of Pseudo-Dionysius the Areopagite.¹⁹ After selecting the “Liste” tab on the main site and inputting the NTVMR identification number for this manuscript (32062), a large quantity of information appears on the next page: date of production (thirteenth century), New Testament works it preserves (only Revelation), the extent of this work (29 leaves), its place within a larger object (fols. 131–159 in this codex), its attachment to a commentary (in this case, Oecumenius), the number of columns per folio (1), and number of lines per folio (46) (Figure 1). Users may also avail themselves to additional information provided by the Pinakes database, including its writing support (paper), identifying diktyon number (68057), and script (minuscule) (Figure 2). Direct access to the manuscript’s entry in Pinakes through a link is also available, even though the Pinakes page currently gives an incorrect GA number.²⁰

Even more information is accessible via the bibliography tool at the bottom of the page, which in this case offers two sources (without exact page numbers) and a link to Elliott’s online bibliography, which

¹⁵ The approach of the NTVMR can be contrasted to the special focus afforded specific manuscripts on other sites, like Codex Sinaiticus <<http://www.codexsinaiticus.org/en/>> and GA 460 (Venice, Marciana Gr. Z 11 [379]) <<https://humarec.org/>>. On the digitization of manuscript images of the New Testament with special reference to the Codex Sinaiticus project see Parker, *Textual Scholarship*, 128–142. The digitization of images in the NTVMR stands somewhere between mass digitization and critical digitization: the images are not always of high quality and the comprehensiveness of the bibliographic information attached is often incomplete, but users and editors are now back-filling information pertinent to the images, including transcriptions, paratextual image tags, indexes, and other metadata. On the relationships between mass and critical digitization see Dahlström, “Critical Editing and Critical Digitisation,” 79–97.

¹⁶ 95.2% of papyri, 79.3% of majuscules, 17.6% of minuscules, and 1.3% of lectionaries have been indexed as of 18 January 2019.

¹⁷ For the latest print versions of these tools, see Aland et al., eds., *Kurzgefasste Liste* and Elliott, *A Bibliography of Greek New Testament Manuscripts*. The Elliott bibliography is available online at <https://bibil.unil.ch/bibil/public/default.action?request_locale=fr> [accessed 30 January 2019].

¹⁸ See the preliminary list of “hybrid” manuscripts in Elliott, *New Testament Textual Criticism*, 154–155. Elliott lists GA 046 2015 2016 2017 2018 2020 2022 2023 2024 2025 2027 2030 2038 2042 2048 2049 2050 2051 2052 2054 2055 2056 2059 2060 2070 2074 2077 2078 2083 2196 2329 2428 2434 2436 2493 2663. This list remains incomplete.

¹⁹ See GA 1948 2016 2024 2055 2059 2062 2595.

²⁰ GA 2162 instead of 2062: <<https://pinakes.irht.cnrs.fr/notices/cote/68057/>> [accessed 21 January 2019]. Diktyon numbers were assigned in an effort to link information on Greek manuscripts across digital workspaces. See Binggeli and Cassin, “Le project Diktyon,” 201–206.

provides two further results when the link is selected, both from H. C. Hoskier (Figure 3).²¹ The bibliography is deficient, especially in light of the more substantial bibliography on the Pinakes site, which includes fuller data on the other parts of the codex and its codicology. But even together, these bibliographies currently omit significant material relevant to this manuscript. Notably, neither references the fullest examination of Revelation in the context of this codex, a 1995 article by Marc de Groote.²² Despite the “work-in-progress” nature of the bibliography of GA 2062, the NTVMR provides a wealth of data before even coming to the images of the manuscript.²³ The information is not comprehensive, but provides substantive guidance for further research.

Manuscript Details

Document ID	32062
Primary Name	2062
Language	g
Origin Year Early	1200
Origin Year Late	1299
Origin Year Description	XIII
Content Overview	r
Leaves Description	29
Columns	1
Columns Max (if varies)	
Lines	46
Lines Max (if varies)	
Lines Description	46
Height	344
Height Max (if varies)	
Width	255
Width Max (if varies)	
Versification	DEFAULT
Institute	Biblioteca Apostolica Vaticana
Location	Città del Vaticano
Shelf Number	Vat. gr. 1426, fol. 131-159
Content	rK
Leaves	29

Figure 1. “Liste” Entry for GA 2062

Canvas Material	Paper
Commentary	<input checked="" type="checkbox"/>
Content Overview	r
Diktyon Number	68057
Shelf ID	
URL	http://pinakes.irht.cnrs.fr/notices/cote/id/68057
INTF Film Count	1
Language	grc
Script	Minuscule

Bibliography

Elliott, J. K. (1997). The Distinctiveness of the Greek Manuscripts of the Book of Revelation. *The Journal of Theological Studies*, 48(1), 116–124. <https://doi.org/10.1093/jts/48.1.116>

Krause, G., & Müller, G. (1980). *TRE Theologische Realenzyklopädie*. Walter de Gruyter.

[Lookup](#) 2062 in J.K. Elliott's Bibliography of Greek New Testament Manuscripts at Université de Lausanne's BiBIL

Figures 2 and 3. Pinakes and Bibliography Data Available through the “Liste” Tab for GA 2062

Selecting the “Manuscript Workspace” tab then pulls up a new page consisting of indexed thumbnail images, a larger manuscript viewer, and a transcription editor. Once a thumbnail image is selected, the full image opens in the manuscript workspace. The brightness and contrast of the image can be edited at the tool bar above the image to create a more legible surface depending on the quality of its digitization. In the

²¹ <<https://bibil.unil.ch/bibil/public/indexAdvancedSearch.action?replay=true>> [accessed 21 January 2019].

²² de Groote, “Die Handschriftliche Überlieferung,” 8–15.

²³ I have been informed in personal correspondence with Gregory Paulson that a focused project is underway at the INTF to improve the bibliographic entries for the minuscules.

case of GA 2062, the text is legible and the manuscript is indexed, preserving only Rev 1:1–2:1 and 15:1–22:21. As far as examining the text of Revelation in this manuscript or the commentary of Oecumenius (it is often difficult to immediately distinguish the two), the NTVMR is extremely valuable. The text of the manuscript can be copied, or, more likely, modified from a base text in the transcription workspace to produce an electronic transcription, a text that can then be further marked up as necessary (see Figure 4).²⁴

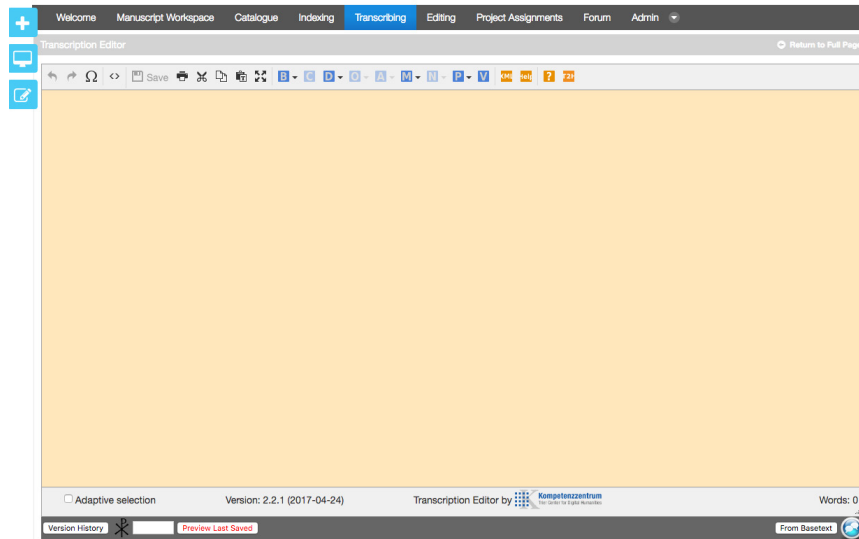


Figure 4. Transcription Workspace

But when it comes to understanding the place of this copy of Revelation in the context of the Pseudo-Dionysian corpus, the lack of further access to the bibliographic composition of the larger codex hinders this examination. Images of the rest of the artefact are lacking and the site does not include an enumerative bibliography beyond the biblical material. Even though this is the only digital copy of any part of this manuscripts that I have located,²⁵ it does not help answer questions about the relationship between Revelation and the Pseudo-Dionysian works that comprise the majority of the codex. Was this codex intentionally produced to juxtapose Revelation to non-biblical works? Why produce such a codex? Is the current combination of the codex the product of later bookbinders or librarians? Are the scribal, aesthetic, and codicological profiles of the codex consistent across all the various works? To answer these questions with any level of surety still requires autopsy examination of the manuscript in its institutional setting, or at least the viewing of every folio of the codex.

But even if digital images of the entire codex were available, it is not certain that they would be sufficient to examine the relationship between Revelation and the rest of the codex. Although digital technologies are valuable for assisting in some forms of codicological research, like the study of watermarks or the folicle patterns of parchment,²⁶ images of 2062 – especially in their current low quality – would be insufficient for mapping the quire structure of the manuscript, the history of its binding, or the ink profiles of the different works of the codex. We can only guess at why larger sections of Revelation are now absent or why Revelation is now bound alongside the works of Pseudo-Dionysius.

It is at this level of manuscript analysis that the inherent limitation of digital images as a proxy for a material object comes to the fore. Regardless of the quality of the images, they acquire a form of autonomy as digital objects in relation to the material artefacts they represent, especially when they are marked up or

²⁴ For more on the functionality of the NTVRM as a transcription tool for editions see Smith, “Old Wine, New Wine Skins,” 407–434.

²⁵ It is not accessible on the Digital Vatican Library viewer <<https://digi.vatlib.it/>> or the CSNTM website <<http://www.csntm.org/>> [accessed 21 January 2019].

²⁶ See Boyle and Hiary, “Seeing the Invisible,” 129–148.

integrated with other interpretive metadata like transcriptions or tags. Although never to be mistaken for the manuscripts themselves, the images do enable researchers to better prepare for in-person examination, to inform the posing of critical questions, and to formulate initial hypotheses. In the case of GA 2062, the NTVMR offers a wealth of information, access to additional digital tools, direction toward printed secondary research, a selection of images, and tools to annotate or transcribe the manuscript. It does not offer access to all the images of the codex or answer every critical question we might bring to 2062 and other manuscripts like it, but it does offer researchers a workspace to begin to formulate relevant questions and, if necessary and possible, to plan excursions to view the manuscript in person, or to decide if such a journey is indeed worth the requisite resources.

As someone who began to seriously study manuscripts only after the NTVMR was published, I cannot imagine working with manuscripts without it. But at the same time I have a sense of ambivalence toward the digital objects as mono-dimensional representations of material artefacts that exists in time and space. This complex relationship with digital images is unavoidable and is perhaps a healthy by-product of changes to our media cultures.²⁷ The presence of the physical object is far more desirable for research purposes than the digital images,²⁸ but the images retain their critical value in contexts, like editing or certain forms of quantitative studies, where efficient access to numerous exemplars is essential. The accruing of metadata attached to these images is in some ways a manifestation of the anxiety that the image is not the artefact it represents; the metadata provides a way to transcend the gap between object and digital representation.

As researchers continue to engage manuscript images and produce modular tools integrated into this collaborative website, the NTVMR will only become a more powerful critical tool, despite its current limitations for some forms of enquiry, modes of analysis for which it was admittedly not initially designed.²⁹ As the NTVMR develops, it will be important for researchers to keep in mind the difference between the artefact itself and its digital representation. And not only in terms of the types of evidence that both forms can provide, but also in terms of their reality as material objects. Digital images enable some forms of efficient analysis, but the objects represented by the images have a presence and materiality that differs from the materiality and elusive presence of the digital realm, which maintains its own distinctive forms of embodiment. Even if the NTVMR will never become a comprehensive and all-encompassing platform for all engagement with New Testament manuscripts, its efficiency and aggregation of tools stimulates new research questions and allows researchers to make connections across the corpora that have not yet been observed. What is valuable about the NTVMR is that its scholarly users can make it do what they want it to, if only enough funding and labour are can be mustered.

In addition, images of New Testament manuscripts are available on a number of institutional websites, none of which boast the collaborative framework and modular format inherent to the NTVMR, but which maintain other benefits for different forms of research. An interesting example of this type of tool that transcends institutional holdings is the website of the Center for the Study of New Testament Manuscripts (CSNTM), a privately funded venture founded and managed by Daniel Wallace.³⁰ The goals of the CSNTM are manifold: to make high quality digital photographs of every Greek New Testament, to create “exhaustive collations” of those manuscripts (a Hoskierian enterprise), to analyze scribal habits, to develop electronic tools to examine the manuscripts, and to “cooperate with other institutes in the great and noble task of determining the wording of the *autographa* of the New Testament.”³¹ Thus far, the CSNTM has focused on aggregating digital images, visiting a number of institutions to partner in photographing their artefacts.

The main feature of the site is its library of images, which are often of higher quality than the images in the NTVMR, even though the library is limited in the quantity of manuscripts available in comparison to the

²⁷ Not all digital representations of material artefacts are mono-dimensional. See, for example, Hunt, Lundberg, and Zuckerman, “Concrete Abstractions,” 149–171.

²⁸ Except in cases where the text of the manuscript is more legible in the high-quality image than in the manuscript itself.

²⁹ As I noted above, the initial purpose of the NTVMR was to facilitate the production of editions and associated tasks, especially transcription and collation. The example of GA 2062 transcends the intended functionality of the NTVMR, but the site is flexible enough to take on tools that address other research questions without losing its primary functionality as a transcription tool.

³⁰ <<http://www.csntm.org/>> [accessed 21 January 2019].

³¹ <<http://www.csntm.org/About/WhoWeAre/Mission>> [accessed 21 January 2019].

NTVMR.³² Most of the manuscript images are also partially indexed, tagged with a selection of paratextual features, and described in an “information document” that constitutes a catalogue entry for the manuscript. But the control of the indexing, tags, and transcriptions (when they appear) are held with the fellows of the Center and remain anonymous. The site does not allow for scholars or the public to mark up, transcribe, or otherwise work with the images, although there is a link for suggesting changes to the tags and indices. (The process of implementing or rejecting these suggestions is unknown.) The images cannot be downloaded for further study, but must be examined image by image on the site. The CSNTM library is a repository, not a workspace. It is of course helpful and important to be able to view high quality digital images, but it is more important for scholars and other serious readers to be able to interact with, mark up, and interpret the manuscripts and their texts. The tightly controlled structure of the CSNTM site and its editorial oversight drastically decreases its usefulness as a critical tool.

Another contrast to the NTVMR is that the CSNTM has undertaken an expressly critical approach to digitization, in which images are created, curated, and managed by a select core group of scholars. This approach has its benefits: a high-quality product, mostly accurate metadata, and long-term security for the management of the site. Critical digitization for a corpus as vast as the Greek New Testament is a luxury available only to those whose long-term funding sources are secure, or at least not reliant on the whims of national funding bodies.

The differences in approach to digitization between the CSNTM and NTVMR requires collaboration between these institutions for the benefit of the advancement of research on New Testament manuscripts, which is the express goal of both groups. But there is no evidence of integration between these websites. This apparent lack of cooperation in image sharing on the part of CSNTM is surprising in light of CSNTM’s explicit goal of “cooperating with other institutes.”³³ Since the NTVMR is the manifestly more sophisticated workspace, it makes sense that images in the CSNTM should also be accessible in the NTVMR, a move that would only facilitate the CSNTM’s own goals of producing research on these manuscripts related to scribal habits and the reconstruction of the “original” text of the “autographs.” While it is impossible to make transcriptions on the CSNTM website, the NTVMR is expressly designed for this purpose. If the CSNTM wants to produce “exhaustive collations,” the most efficient way to accomplish this task would be to share their images in scholarly digital workspaces like the NTVMR. This seeming lack of cooperation, whatever its reasons, demonstrates that public funding bodies are right to require open access to materials produced under their aegis. This requirement facilitates research and fruitful collaboration.

Issues of propriety over manuscript images notwithstanding, the CSNTM is a valuable tool for the study of the manuscripts that they have thus far digitized. A good example of this value is GA 2604 (Dublin, CBL W 139), a deluxe illuminated twelfth-century Gospel codex. Until recently the images in the NTVMR of the manuscript were incomplete and those that existed for it were digitized black and white microfilm (Figure 5). The manuscript is also unindexed on the NTVMR, since its text is of little import for the current ECM projects on the Gospels. In contrast, the images in the CSNTM library are entirely complete, indexed to a basic level, and in colour, even if the gilded ink appears somewhat reflective in the images (Figure 6).

³² Another issue with the CSNTM is that the site is not transparent about which manuscripts they have imaged to this point or how many they hope to digitise in the future. This lack of transparency makes it difficult to determine how the CSNTM’s library differs quantitatively from the NTVMR. As of 30 January 2019, the search page notes that 1,562 results are available, but only by searching for a particular manuscript does one learn if it is available on the site.

³³ The “Recent Projects” tab also includes the statement that “the Center continues to make more images *free for all and free for all time*” (emphasis original) <<http://www.csntm.org/About/RecentProjects>> [accessed 24 January 2019]. This statement is accurate as long as one has access to the CSNTM site, but the fact that the Center does not allow for the downloading of their images for research purposes, or apparently allow their higher-quality images to replace black and white microfilm on the NTVMR, suggests the “free for all” does not necessarily include academic researchers. See also Wallace, “Challenges in New Testament Textual Criticism,” 91 who notes that the CSNTM and INTF had apparently agreed to collaborate on the production of images in Europe: “But now is the time for collaboration with other institutes” (97).

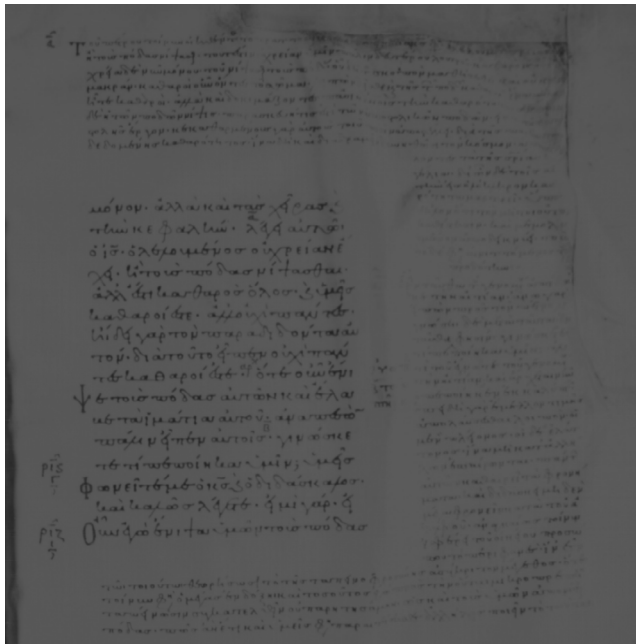


Figure 5. GA 2604 (CBL W 139) 347r in the NTVMR © The Trustees of the Chester Beatty Library, Dublin

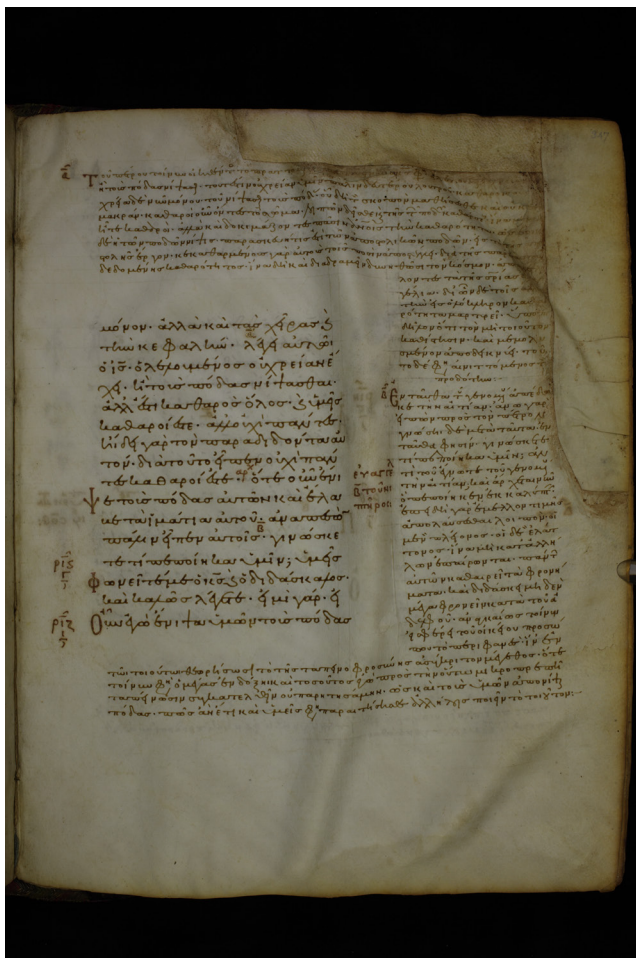


Figure 6. GA 2604 (CBL W 139) 347r in CSNTM Library The Center for the Study of New Testament Manuscripts (www.csntm.org) digitized CBL W 139 at The Chester Beatty. © The Trustees of the Chester Beatty Library, Dublin

The more complete and higher-quality images in the CSNTM library allow for a fuller analysis of the manuscript, including its frame catenae, cruciform Letter to Carpianus, Eusebian apparatus and canon tables, synaxaria, various traditional prologues, evangelist icons, decorative headpieces at the start of each Gospel, kephalaia lists, and Hebrew lexica for each Gospel. Until recently, only visiting the Chester Beatty in person would have afforded access to the fullness of this artefact,³⁴ which explains why it has never been analyzed in any scholarly context as far as I have been able to divine. In addition to understanding the paratextuality of an expensively produced late-Byzantine Gospel codex, a concrete consequence of the complete and improved images has been the identification of a personal note in the lower margin of 310v (Figure 7), which details the name, occupation, and family background of a one-time reader of the manuscript.

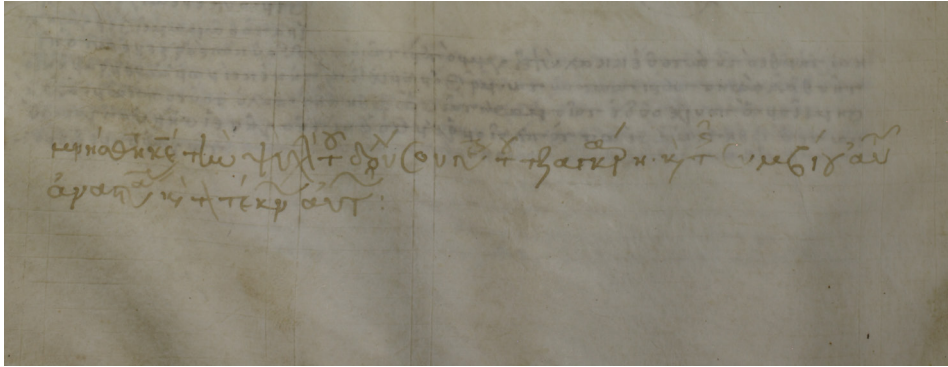


Figure 7. GA 2604 (CBL W 139) 310v (detail) The Center for the Study of New Testament Manuscripts (www.csntm.org) digitized CBL W 139 at The Chester Beatty. © The Trustees of the Chester Beatty Library, Dublin

μνησθητ(ι) κ(υρι)ε την ψυχην του δουλ(ο)υ σου πετρ(ου) τζαγκαρη . και τ(η)ς συμβιου αυτ(ου) αναστασιας και των τεκνων αυτων

Remember, Lord, the soul of your servant Peter the shoemaker, and his partner Anastasia and their children.

Without this note, any memory of Peter the shoemaker and his family may have been lost to history. It is not that that Peter and his family were people of great consequence who changed the course of history in measurable ways, but this type of information is crucial for glimpsing the lives and social realities of people who may have actually read and interpreted the Greek New Testament in different contexts. The images have also illuminated the repair patterns in numerous folios, showing that parts of the water damaged parchment were replaced by an illuminated musical score, evidence that helps us to reconstruct the life and use of the manuscript. The critical digitization of CSNTM makes for slower work in comprehensively imaging every New Testament manuscript, but it provides a richer set of curated data for researchers to explore the consequence of manuscripts even beyond the search for the text of the “autographs.”

The “Information Document” to GA 2604 is also a helpful tool, correcting and supplementing some of the manuscript’s information in the *Kurzgefasste Liste* and offering an outline of its content, even if the cataloguer did not take the time to identify the bi-columnar Greek work that opens and closes the codex as

³⁴ The Chester Beatty recently launched a new website with digital collections and the entirety of W 139 is available for download as a single PDF or folio by folio <https://viewer.cbl.ie/viewer/object/W_139/10/> [access 22 January 2019]. The CSNTM site does not allow images to be downloaded, protecting the propriety of their digital images as property of the Center. Additionally, the CBL owned images for this manuscript have now been uploaded to the NTVMR, bypassing the CSNTM altogether.

a recycled witness to John Chrysostom's *Homilies on Matthew* 52–54 (CPG 4424).³⁵ If only these images were available in the NTVMR, researchers beyond the core CSNTM team would be able to mark up, transcribe, and tag the images and texts of GA 2604 and others like them. Despite the hope for greater cooperation between institutes, the CSNTM is a valuable repository of images when they have them, even if the Center's proprietary stance over its images, control over their metadata, and lack of cooperation with other institutes curtails in unfortunate ways the site's usefulness as a critical tool.

The final digital tool that I examine here is Pinakes, an online catalogue with an interest in manuscripts of all Greek literature produced through the end of the sixteenth century with the exception of manuscripts inscribed on papyri.³⁶ Originating as the microfiche Greek Index Project of the Pontifical Institute of Medieval Studies in Toronto, the site is now managed by the Institut de Recherche et d'Histoire des Textes in Paris in partnership with multiple other academic stakeholders.³⁷ The site was first published in 2008 and now contains at least partial data on over 40,000 manuscripts housed in over 1,300 libraries worldwide. Unlike the NTVMR and CSNTM, Pinakes does not preserve any images of the manuscripts, but functions instead as an aggregator of catalogues, codicological data, and manuscript content information. The non-papyrological witnesses to the New Testament are also included within this mass of material.

Returning to the questions surrounding manuscripts that preserve Revelation alongside the works of Pseudo-Dionysius, for example, Pinakes proves helpful even if images of the whole manuscript are not readily available online. This is the case for GA 2042 (Naples, Bibl. Naz., MS. II. A. 10), a fourteenth century copy of Revelation with the Andrew of Caesarea commentary. This manuscript is not in the CSNTM library and, although the entirety of Revelation is accessible in the NTVMR in the form of indexed, digitized, black and white microfilm, most of the non-biblical material in the manuscript is not available. After a simple search via library call number, we reach the Pinakes entry for GA 2042 (diktyon 45988). The entry has three parts. The first, "Identifiants," cross-references to other online databases or catalogues that identify the manuscript in a way other than the diktyon number. In this case, the manuscript is identified also as "Aland minuscules" 2042, with a link that brings users to the "Manuscripts Workspace" page of the NTVMR where partial images of the codex can be consulted. Pinakes and the NTVMR are integrated where their material overlaps. Additionally, the manuscript is also identified as "Napoli, BN, II A 10" in the online catalogue Nuova Biblioteca Manoscritta (NBM), and a link transports users to the entry on that site.

The second part of the entry is a bibliography (Figure 8). In the case of this manuscript, the bibliography of secondary resources that engage this manuscript is minimal and incomplete. The NBM entry accessible via hyperlink in the "Identifiants" section provides a much richer source of information, especially as it regards approaches to this manuscript in the context of biblical studies.³⁸ The Elliott bibliography available via the "Liste" function in the NTVMR adds one other reference not in NBM: this manuscript's entry in Hoskier's *Concerning the Text*. Together, these three bibliographic tools provide an adequate overview of previous work that has engaged this manuscript. This is an important lesson when it comes to digital tools

³⁵ A smaller issue with the "Information Document" is that its author is identified only by initials, in this case dbw, which is likely Daniel B. Wallace (although this is a guess). The photographers of the manuscript are identified as rpc and jwp, which does not tell the public or scholarly community anything about the identity of the people responsible for the work. The names of people responsible for this material must be made public, otherwise these documents, like the images on the site, will remain oriented toward the use of those inside the core team of the CSNTM who have further inside information. Is time really so limited that proper attribution cannot be bestowed on those doing the work? This admittedly minor point speaks volumes about the CSNTM's stance toward outside researchers.

³⁶ <<https://pinakes.irht.cnrs.fr/recherche-manuscrit.html>> [accessed 22 January 2019].

³⁷ <<https://www.irht.cnrs.fr/>> [accessed 22 January 2019]. Collaborative partners include the *Bibliotheca hagiographica graeca manuscripta* project (BHG), run by the Société des Bollandistes in Brussels, and the ParaTexBib project managed by Martin Wallraff in Munich <<http://www.paratexbib.eu/>> [accessed 31 January 2019]. See Binggeli and Cassin, "Le project *Diktyon*," 204. Pinakes, like the NTVMR, is a highly collaborative venture that is continuing to develop to meet the changing needs of scholars who work with Greek manuscripts. On the history of Pinakes, see Binggeli and Cassin, "Recenser la tradition manuscrite des textes grec," 91–106.

³⁸ The Pinakes bibliographies tend to focus on codicological issues and are culled from resources and journals that focus on this approach. The entries are updated with secondary resources up to 2010 <<https://pinakes.irht.cnrs.fr/presentation.html>> [accessed 31 January 2019].

for the study of New Testament manuscripts: multiple sites must be referenced on a particular issue to gain sufficient bibliographic information since each focuses on aspects of the manuscript from different critical perspectives. And even then these tools cannot stake a claim to comprehensiveness.

Bibliographie :

Répertoire ↕	Titre	Commentaires ↕	Pages ↕
	M. De Groote, <i>Christophori Mitylenaii Versuum variorum collectio Cryptentis</i> , CCSG 74, Turnhout, Brepols, 2012		
	M. Formentin, « Uno Scriptorium a Palazzo Farnese ? », <i>Scripta</i> , 1, 2008, p. 77-102		
	A. Palla, « Un testimone trascurato della Seconda lettera ad Ammeo di Dionigi di Alicarnasso », <i>Néa Πύλη. Rivista di Studi Bizantinistici</i> , 13, 2016, p. 33-44 ; figg. 1-2		37 (n. 23)

Figure 8. Bibliography on Pinakes for GA 2042 (dikyton 45988)

The final section in the Pinakes entry is “Contenu” (Contents, Figure 9). The first line of this section offers space for codicological comment, including the number of folios, date, writing support, information on named copyists, and other comments. This entry is blank for 2042. Next comes the enumerative list of works in the manuscript. This list counts eighteen works in this codex, dividing out the material from Pseudo-Dionysius and the commentary on his work by Maximus the Confessor into separate entities, even though the commentary appears in the margins of the Dionysius text (as we are told in the “Commentaire” column: *in marginibus iuxta textum*). A surfeit of other information on the makeup of the codex and its works is also available, including the location of each work in terms of folio, the name of the author, the Latin title of the work, its CPG or BHG number, the century of each part’s production (allowing for codices that have multiple production layers), and editorial comments on each work by the (anonymous) cataloguer. Finally, the last column gives the sources from which this information was aggregated. (Much, but not all, of the data in Pinakes is not based on first-hand experience with the manuscript, but amassed from published catalogues and other secondary sources.) In this case, the information on the entry comes from Elpidio Mioni’s catalogue of Greek codices in the national library of Naples.³⁹

From this information we learn that the majority of the codex (fols. 1–116) are devoted to Pseudo-Dionysius, complete with commentary of Maximus the Confessor located in the margins, and that Revelation with the Andrew commentary immediately follows this lengthy section (fols. 117–143v). Both the Pseudo-Dionysius/Maximus material and the Revelation/Andrew combination were produced in the same century in the judgement of Mioni, suggesting that they were intentionally designed to be juxtaposed in the initial production layer of the codex. The continuous foliation in the left column of the entry also indicates this judgement. And we are told that the Andrew commentary too appears *in marginibus iuxta textum*, suggesting that the layout of the text and commentary is consistent from Pseudo-Dionysius to Revelation. The change of foliation following Revelation for the material from Thucydides and Dionysius of Halicarnassus (I–VIII) reflects the judgement that these works were copied later than the other parts of the codex.

In lieu of access to the manuscript itself in the Biblioteca Nazionale Vittorio Emanuele III in Naples or to Mioni’s rare print catalogue, the Pinakes entry is the most efficient tool for exploring the larger bibliographic context of Revelation in this artefact, even if most of its information is conveyed in French, Italian, or Latin. Pinakes also has the added value of connecting the entry to other manuscripts in the database. Selecting one of the works in the “Oeuvre” column, for example, brings researchers to a list of other manuscripts in the database that preserve that same work. After clicking on “Commentarius in Apocalypsin” a new page opens with a list of eighty other manuscripts that preserve the Andrew commentary. Even though this list is not comprehensive – by my count 109 Greek manuscripts preserve at least parts of the Andrew commentary – it provides a basic data set to begin to explore the Greek manuscript tradition of this work. Selecting the “Apocalypsis Iohannis” hyperlink reinforces the incompleteness of the Pinakes database when it comes to biblical manuscripts, the papyri and post-sixteenth-century manuscripts notwithstanding: it lists only 91

³⁹ Mioni, *Catalogus codicum graecorum*.

manuscripts that contain Revelation, even though Revelation's most recent catalogue lists over 300.⁴⁰ This does not mean that the other manuscripts of Revelation are not accessible in the database, but that this search tool is not always comprehensive. New Testament works were initially catalogued as anonymous in the analogue card version of the database and digital entries created directly from these files have not yet been updated.⁴¹

Issues of comprehensiveness notwithstanding, Pinakes, as an interconnected aggregator and organizer of print catalogues, secondary research, and codicological information represents an extremely valuable tool for anyone working with late antique and medieval biblical manuscripts. Not only does the tool offer insight into the bibliographic composition of some of these codices, but it contextualizes the transmission of the New Testament within the broader textual cultures of which it was a part. It also supplements sites like the NTVMR and CSNTM that focus primarily on images. Pinakes reminds us that the historical, cultural, and contextual span between the great fourth and fifth century codices of Sinaiticus, Vaticanus, and Alexandrinus and the early print editions of the New Testament is not an empty space. And its information is a first stop to begin to map this liminal space in the context of New Testament studies.

Contenu :

Numéro	Titre	Folios	Siècle	Date	Support Principal	Remarque	Copistes, Possesseurs & Autres	Révision				
0												
Témoins (18)												
Folios	Auteur	Oeuvre	Identifiant	Recension ou partie	BHG	Date Lit.	Siècle	Date	Commentaire	Contenu	Rev.	Biblio.
001-3v	Maximus confessor	Prologus in opera Pseudo-Dionysii	CPG 7708.1 BHG 0558m				13		Cum lacuna			R(III)1778
004	Christophorus Myllenaues	Epigramma In Dionysium Areopagitam					13					R(III)1778
004-48v	Maximus confessor	In Dionysii De Diuinis Nominibus	CPG 7708.4				13		In marginibus iuxta textum; in fine epigramma (PG 3, 117 A2-4)			R(III)1778
004-48v	Dionysius Areopagita (pseudo)	De diuinis nominibus	CPG 6802				13		Præmittitur (f. 4) tabula capitulum			R(III)1778
048v-71	Maximus confessor	In Dionysii De Caelestia Hierarchia	CPG 7708.2				13		In marginibus iuxta textum			R(III)1778
048v-71	Dionysius Areopagita (pseudo)	De Coelesti Hierarchia	CPG 6600				13		In fine epigrammata duo (PG 3, 116c)			R(III)1778
071-103v	Maximus confessor	In Dionysii Ecclesiastica Hierarchia	CPG 7708.3				13		In marginibus iuxta textum			R(III)1778
071-100v	Dionysius Areopagita (pseudo)	De Ecclesiastica Hierarchia	CPG 6601				13		In fine epigrammata tria (PG 3, 116-117)			R(III)1778
101-103v	Maximus confessor	In Dionysii De Mystica Theologia	CPG 7708.5				13		In marginibus iuxta textum			R(III)1778
101-103v	Dionysius Areopagita (pseudo)	De Mystica Theologia	CPG 6603				13		Præmittuntur tabula capitulum et epigramma; sequitur aliud epigramma (PG 3, 997-1048)			R(III)1778
103v-115v	Maximus confessor	In Dionysii epistulas	CPG 7708.6				13		In marginibus iuxta textum			R(III)1778
103v-115v	Dionysius Areopagita (pseudo)	Epistulae 1-10	CPG 6604-6613				13					R(III)1778
115v-118v	Hagiographica	Dionysius Areopagita (S.). Commentarius	BHG 0558e-0558g		0558e		13		De quibusdam dictionibus a Dionysio usurpatis, quarum prima pars refert ad BHG			R(III)1778
117-143v	Andreas Caesariensis	Commentarius in Apocalypsin	CPG 7478				13		In marginibus iuxta textum			R(III)1778
117-143v	Testamentum nouum	Apocalypsis Iohannis	BHG 0920z				13					R(III)1778
I-IV	Marcellinus biographus	Vita Thucydidis					14 in.		Fragmentum			R(III)1778
IVv-Vv	Thucydidis historicus	Historiae					14 in.		Vita anonyma (cf. ed. Hude, Lipsiae 1913, p. 10-12)			R(III)1778
Vv-VIII	Dionysius Halicarnassensis	De Thucydidis idiomatibus (ad Amm. ep 2)					14 in.					R(III)1778

Figure 9. Contents of GA 2042 (dikyton 45988) in Pinakes

New Testament scholars are in an enviable position. In addition to the vast quantity of primary and secondary sources available in print, scholars have images of nearly every Greek New Testament manuscript at their fingertips in one form or another. In the NTVMR, the largest of the digital repositories, these images are available in a sophisticated workspace where the metadata produced by other scholars (e.g. transcriptions, underlying XML data, image tags, access to the burgeoning digital ECM) – de facto interpretations of the images in the context of the tradition – is an integrated aspect of the viewing experience. And this workspace is highly interconnected with sites that offer other forms of context on New Testament manuscripts, like Pinakes. And the INTF are continually working to improve the NTVMR as a scholarly tool. Likewise, the CSNTM offers access to manuscript images in a highly curated manner, producing only the highest quality colour digital images and carefully controlling their editing and dissemination.⁴² The potential of their critical digitization project for the study of the manuscripts is significant, even if the analytical value of the

⁴⁰ See Lembke et al., eds., *Text und Textwert*, 2–22. Of course, new material is being added to Pinakes (and the digital *Kurzgefasste Liste*) on a regular basis.

⁴¹ Updates on similar data in Pinakes have been undertaken on hagiographic texts and on Gospel codices, but there are no immediate plans to update data on biblical material in Pinakes writ large, although this task could theoretically be completed at a later date. See Binggeli and Cassin, “Recenser la tradition manuscrite des textes grec,” 92–93.

⁴² Some images on the CSNTM site are high-quality digitisations of black and white microfilm.

site as a workspace is limited as currently constructed. Finally, Pinakes is an important tool for the non-papyrological witnesses to the New Testament because it situates these manuscripts within the broader context of late antique and medieval book cultures. In instances where the NTVMR does not contain images of every leaf of every codex with a New Testament work, Pinakes often provides an enumerative bibliography of the codex as a whole.

But where do these tools leave the field when it comes to working with primary sources? First, the tools both reflect and enable interpretation. Representing the combined labour of hundreds of scholars working over many years, they enable researchers to begin to grapple with the quantity and quality of the Greek witnesses to the New Testament. Their organization already reflects interpretation of the data, since they are designed in response to patterns within the tradition, systematically addressing the needs of scholars, especially those working to produce editions. But these sites also enable more sophisticated forms of engagement with the tradition: greater access to marginalia and commentary, idiosyncratic aspects of each manuscripts, the ability to immediately compare manuscripts side-by-side that are housed in different countries. This is especially relevant for examining manuscripts as reservoirs of reception, as records of producers and readers with particular ideas about the New Testament and its meaning. The efficiency of these models is obvious, and their economic benefits allow more people to participate in the interpretations of these objects and their texts. These tools, especially as they continue to aggregate relevant information, will continue to have an outsized influence on the shape of current research.

But this turn to digital tools for manuscript study also has unforeseen complications. For example, should we continue to conceptualize digital images as mere representations of the “real thing,” or should we begin to treat them as autonomous research objects, especially as images in the sites like the NTVMR continue to accrue different forms of interpretive metadata? What effect do manipulations to digital images have on their relationship to the artefacts they represent? How do the differences in materiality between the artefact and its images – for both are material objects in their own ways – impinge on the way readers approach each instantiation? Working primarily with digital images encourages the forming of particular research questions because they are amenable to certain approaches: textual transcription for the editing of editions, stemmatic analysis like the Coherence-Based Genealogical Method (CBGM),⁴³ and the efficient comparison of multiple manuscripts. These are valuable and important approaches for New Testament studies, but they do not exercise a monopoly on the critical foci for the discipline. For example, as currently configured, the repositories of images do not offer adequate information to analyze the larger bibliographic context of many of the manuscripts (even though Pinakes makes up for this lack in some cases), and the images are not (and may never be) suitable for codicological analysis or the examination of other material aspects of a codex. These features offer information both on the production and the later lives of these books as real people used them in time and space, and they reveal the concrete reading events that offer insight into how people interpreted a particular text or how they conceived of the New Testament as a bibliographic reality.

These tensions notwithstanding, working with digital images, while remaining aware and critical of these digital tools in our research, is important because they are becoming an ingrained part of digital editions, notably the online forms of the ECM. In order to use digital editions to their fullest potential, one must know how to read the manuscripts and to understand the processes by which the editions were constructed. Although print editions will remain important tools for navigating the manuscripts, they have enabled most scholars to largely avoid the most primary sources of the discipline. But the proliferation of manuscript images now allows for the partial bypassing of these print culture conventions, connecting editions to the manuscripts that they seek to represent. Digital tools enable textual scholarship to ask new critical questions and to reimagine the functions and purposes of important tools like printed editions. But we should always remember that different research questions call for different tools. For the textual scholar of the New Testament, many of these tools come from a rich heritage of printed material and otherwise analogue implements.

⁴³ For recent a recent overview and critical analysis of the CBGM, a tool also predicated on the data in the NTVMR's transcripts of Acts and the Catholic Epistles, see Gurry, *A Critical Examination of the Coherence-Based Genealogical Method* (2017) and Wasserman and Gurry, *A New Approach to Textual Criticism* (2017).

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